"oriental names"; it should refer to "Hindu-Arabic numerals." The alphabetical index is not as complete as one might wish it to be.

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A Laboratory Course in Physiology. By WALTER B. CANNON, A.M., M.D., George Higginson professor of physiology in the Harvard Medical School. Second edition. Published by Harvard University. 1911.

This is the set of loose-leaf laboratory notes and directions used in the course in physiology in the Harvard Medical School. It belongs to a class of works which have only begun to appear in recent years. It is not a general laboratory manual like the well-known handbook of Burdon Sanderson, or that of Stirling. Its scope is much narrower. While these works aimed to give, within the limits of their size, accounts of all ordinary physiological methods, the work before us, on the contrary, is merely a precise description of a particular course. Accordingly, it is limited to such methods as the facilities of the Harvard School allow. Within these limitations, however, it is excellent. It has already been adopted as the basis of the physiological course in a number of other institutions and contains much that is valuable and suggestive for the teaching of physiology anywhere.

The most striking defect of this "course" is that it contains far too much of the physiology of the frog and too little of the mammal. For the medical student direct personal experience in working with the circulation in one living cat or dog is worth two or three experiments upon the frog's heart, and a dozen upon the frog's leg. It is most unfortunate that the limitations which misguided humanitarians and anti-vivisectionists place upon the supply of cats in Boston should make it necessary to have the circulation in this animal worked out by the students in *groups of twelve.* This certainly falls far short of the important educational principle urged by Pearce that "the students should do it themselves." The reviewer knows from personal experience that the largest number of students who can possibly take part in a blood-pressure experiment on one cat is five. If mammalian material were as abundant as it ought to be for such a course, the work on the frog here outlined could profitably be cut in half. Each group should number four or five students instead of twelve and should have, instead of one cat, six to ten.

Much of the work on the frog here given could be profitably replaced by experiments on man. Simple sphygmomanometers can be provided cheaply, and should be used for experiments on the students themselves on a much more extensive scale than is outlined in these notes.

The weakest point in the notes is the section on respiration. Only eight pages are devoted to this subject, while muscle nerve physiology receives eighteen. The progress in knowledge of respiration within recent years, for which we are indebted principally to Haldane and his pupils, has been made largely by experiments upon man. These experiments are ideally suited to a laboratory course. Among them may be mentioned that of voluntary forced breathing and the succeeding apnœa; that of the artificial production of Cheyne-Stokes breathing requiring for its demonstration merely a tin of soda lime and a long tube; and that of the duration of the voluntary holding of the breath without preparation, after forced breathing, after oxygen and after forced breathing and oxygen.

These, however, are merely criticisms of detail. In general this work is certainly by far the best of its kind that has yet appeared. No other educational institution in America, perhaps none in the world, in recent years has made so many valuable experimental contributions to the theory and methods of teaching as has Harvard. Among these contributions not the least valuable is the demonstration that science in general and physiology in particular can be, and ought to be, taught by laboratory methods. Originally conceived by Huxley and first practised in this country by Newell Martin at Johns Hopkins and by the

late Professor Bowditch at Harvard, this idea has finally developed in the hands of the latter's successor into the work before us. It has the particular merit of making available everywhere the results of twenty years of experience in the teaching of physiology at the Harvard Medical School.

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February 27, 1912

PLEISTOCENE MAN FROM IPSWICH (ENGLAND)

So much has been said in the public press concerning a human skeleton of reputed great antiquity recently found near Ipswich, England, that a request from the editor of SCIENCE alone sufficed to cause me to alter my original decision not to write anything on the subject until after I had seen the skeleton as well as the locality from which it came. On receipt of communications from Mr. J. Reid Moir, who found the remains and from Professor Keith, who is making a detailed study of them, it is possible for me to comply with the request without further delay.

The main facts are these. On October 6, 1911, Mr. J. Reid Moir, of Ipswich, was notified by Messrs. Bolton and Laughlin, local brickmakers, that one of their workmen, while removing surface clay to reach the underlying glacial gravel, had encountered human bones. Mr. Moir proceeded at once to the pit and found that a portion of a human skull still attached to a complete encephalic cast of boulder clay had been recovered. Recognizing the importance of the find, Mr. Moir removed the remainder of the skeleton in the presence of three gentlemen, Messrs. Woolnough (curator of the local museum), Canton, and Snell. In order to preserve the extremely fragile bones, the containing beds were removed with them. After this had been done, three geologists, Dr. J. E. Marr, F.R.S., Mr. W. Whitaker, F.R.S., and Mr. George Slater, F.G.S., were called to Ipswich to examine the section.

A sheet of hard chalky boulder clay of varying thickness is spread over East Anglia, overlying stratified mid-glacial sands. Between these deposits and at a depth of only four and one half feet the skeleton was found. Was it interstratified? This question will probably never be answered to the satisfaction of all. According to Mr. Moir, a "most careful examination of the section before the disinterment took place showed clearly that no signs of any previous digging were visible, the clay above the skeleton appearing to be in every way the same as that which extended for some distance on each side of it." The presence of a calcareous band immediately underneath the skeleton was noted as well as the fact that it "extended more or less continuously on either side of the spot where the remains were found"; and it is pointed out by Mr. Moir that if a grave had been dug through the boulder clay, rain water percolating through the loose grave filling would have dissolved away the calcareous deposit. One of the best bits of evidence is that the skeleton was partly embedded in glacial sand and partly in boulder clay; "this sand showed clearly lines of stratification and was conformable with that underlying it."

On the other hand Mr. George Slater, one of the three geologists called to view the place, but not until after the bones had been removed to London, looks upon the site as highly unsatisfactory. Considering the loss by infiltration he would not expect to find distinct signs of a grave after a lapse of some thousands of years. The position on the side of a valley points to the possibility of hill wash or re-deposited boulder clay.

It was a wise precaution from every point of view to remove the matrix with the skeleton. This was done in blocks which were forwarded to Professor Arthur Keith at the Museum of the Royal College of Surgeons, London. Here each block was impregnated with a solution of gelatine, after which the bones were exposed by piecemeal removal of the overlying boulder clay, but were still left in situ on the underlying glacial sands. According to Professor Keith the whole skeleton was represented, its various parts being in